

REMARKS

This is intended as a full and complete response to the Office Action dated December 22, 2008, having a shortened statutory period for response set to expire on March 23, 2009. Claims 1-2, 8-9, 14-15, 18, 23, 25, 31, 32, 34, 49, 55, 56, 58, 63, and 66 have been amended and new claims 71-84 have been added to more clearly recite certain aspects of the invention. Applicants believe no new matter has been introduced by the amendments and the new claims presented herein. The amendments and the new claims have been made in a good faith effort to advance prosecution on the merits. Claims 10 and 70 have been cancelled without prejudice. The limitations of claim 10 have been incorporated into claim 1. Applicants reserve the right to subsequently take up prosecution of the claims as originally filed in this application in a continuation, a continuation-in-part and/or a divisional application. Please reconsider the claims pending in the application for reasons discussed below.

Applicants would like to thank the Examiner for conducting an interview on March 23, 2009. During the interview, the Examiner indicated that the amendments appear to have overcome the references of record. However, the Examiner also indicated that an updated search may be performed upon receipt of the amendments submitted herewith. Further, upon review the amendments herein, if the claims are rejected, the Examiner indicated that the next action may not be made final.

Claims 1-11, 13-18, 21, 25-29, 31, 34, 49, 51, 54, 55, 58-63, 66, and 70 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,574,723 ("Chiles"). The Examiner takes the position that Chiles teaches "a system with a generally upright deflector body 40 with a tilt angle relative to vertical; and at least one bridle connected to a seismic cable 26, the bridle including upper segments 32, 38 secured to an upper connection point on the deflector body, and lower segments 34, 36 coupled to a lower connection point on the deflector body, wherein the upper segment, lower segment and deflector body define a geometry there between; and at least one actuator for adjusting the geometry to control the tilt angle of the deflector body via adjusting the ratios of the upper lower segments" in column 3, lines 12-32. The Examiner also notes that Chiles teaches "a pair of actuators that can be operated

independently” in column 6, lines 4-16. The various sections in Chiles relied upon by the Examiner are provided herein for the Examiner's convenience.

Hitching device 28 includes a locking member 30 at one end thereof arranged to mechanically lock into latching mechanism 24. Hitching device 28 also includes four paravane lines 32, 34, 36 and 38, each of which is connected to a corner of a paravane 40. The upper paravane lines 32 and 38 are fixedly attached to hitching device 28. The lower paravane lines 34 and 36 are connected to a limit lug or stop 42 (FIGS. 2a-2d) which permits the lines to be selectively shortened or lengthened for manipulating the position of the paravane as described hereinafter in greater detail. The main line 26 extends through hitching device 28 and is tied to lug 42, as best seen in FIGS. 2a-2d. As shown in FIG. 1, paravane 40 will be positioned substantially vertically in the water during the surveying operation and will be rotated to a substantially horizontal position for retrieval. Before launch, the paravane is positioned in a stowed upright position with storage life line 22 manually positioned onto a boat hook (not shown) by the operator. Storage life line 22 is operable to lower paravane 40 upon deployment thereof and raise it back to its towed position when the survey operation is completed. (Chiles, column 3, lines 12-32).

In this embodiment, the rudders 108 and 110 are selectively operable to control the positioning of paravane 100. An operator onboard vessel 10, by selectively engaging switches on the operating panel, transmits signals which are effective when received by control circuit 126 to operate servo motor 118. Servo motor 118 then rotates driving swivel device 112 to adjust the angle of rudder 108 and thus alter the direction of paravane 100. Rudder 108 can also be controlled to selectively vary the depth at which the paravane is deployed. The same operation may be performed

with respect to rudder 110 through the activation of similar circuitry located in the lower portion of paravane 100. (Chiles, column 6, lines 4-16).

Chiles generally describes deploying a paravane 40 such that it lies horizontally on the water and having an operator pull back on a main line 26 thereby pulling lower paravane lines 34 and 36 until a lug 42 abuts with a hitching device 28. (See Chiles, column 3, lines 46-65) As such, the paravane 40 is forced from a horizontal position lying on the water into a vertical position in the water. Further, Chiles describes retrieving the paravane 40 by releasing the lug 42 from the hitching device 28 such that the paravane 40 lies horizontally on the water. (See Chiles, column 4, lines 7-10) In contrast, the claimed invention is directed at controlling the depth of a deflector while the deflector is being towed in a body of water by varying a tilt angle. Chiles does not teach controlling the depth of the paravane because the hitching device 28 and lug 42 are limited to a single position that causes the paravane to lie either horizontally on the water or vertically in the water. Further, Chiles does not teach how to position the paravane deeper into the water by adjusting a ratio of an upper and lower segment coupled to the paravane. During the interview, the Examiner relies on Figures 2A-2D as teaching this limitation. Applicants respectfully traverse this interpretation. Chiles describe Figures 2a-2d as teaching only moving the paravane from lying horizontally on water to lying vertically in water. (See column 3, lines 60-65). Nothing in the description for Figures 2A-2D proposes adjusting the ratio of an upper segment and a lower segment to vary the tilt angle, thereby controlling the depth of a deflector.

As such, the above referenced sections and Chiles, as a whole, do not teach or disclose “an actuator coupled to the bridle, wherein the actuator is configured to adjust the ratio of the length of the first upper segment to the length of the first lower segment to vary the tilt angle of the deflector body, thereby controlling the depth of the deflector body as the deflector body is being towed inside the body of water by the vessel,” as newly recited in claim 1. Chiles does not teach altering the ratio of the length of the first upper segment and the length of the first lower segment to change the depth of the paravane. Chiles, in fact, mentions nothing about a ratio of lengths, let alone about adjusting the ratio of lengths to vary a tilt angle of the deflector body. In contrast, Chiles

is directed towards changing the angle of incidence or attack angle of a paravane. (See Chiles, column 5, lines 7-19) The attack angle is different from the tilt angle. The attack angle controls the lateral/horizontal position of the paravane, but the tilt angle effectively controls the depth of the paravane. (See Chiles, column 5, lines 15-19)

Further, claim 1 has been amended to provide clarity to the term “ratio”. As such, claim 1 now includes “a bridle connected to a seismic cable, the bridle having a first upper segment secured to a first upper connection point on the deflector body, and a first lower segment secured to a first lower connection point on the deflector body, wherein a length of the first upper segment and a length of the first lower segment is used to define a ratio.” Support for this amendment may be found throughout the specification, including paragraph [0049].

Claim 1 has also been amended to now include the limitations from claim 10, which has now been cancelled without prejudice.

Additionally, Chiles requires having a segment attached to each corner of the paravane (four segments in total). (See Chiles, column 3, lines 60-64). In contrast, claim 1 only requires two segments to control the depth of the deflector body. In view of the above reasons and the amendments made to claim 1, Applicants respectfully submit that claim 1 is patentable over Chiles. Claims 2-29 and 31-34 are also patentable over claim 1 since they depend from claim 1. Claims 30 and 35-39 have been cancelled without prejudice, thereby rendering the rejection moot with respect to those claims. Withdrawal of the rejection is respectfully requested.

Claim 49 has been amended to include “adjusting the ratio of the length of the first segment to the length of the second segment to vary the tilt angle between the deflector and the vertical using the first upper rotatable towpoint and the first lower rotatable towpoint, thereby controlling the depth of the deflector inside a body of water as the deflector is being towed behind the vessel.” Support for this amendment may be found throughout the specification, including paragraph [0049]. As mentioned above, Chiles does not teach or disclose “adjusting the ratio of the length of the first segment to the length of the second segment to vary the tilt angle between the deflector and the vertical.” Chiles mentions nothing about a ratio of lengths, let alone about adjusting the ratio of lengths to vary a tilt angle between the deflector and the vertical to control the

depth of the deflector. Furthermore, Chiles is directed at controlling the angle of incidence of the paravane and not the tilt angle. Chiles mentions nothing about a tilt angle or altering the tilt angle to control the depth of the deflector body. Accordingly, claim 49 is patentable over Chiles. Claims 51, 54-55, 58-63, 66 and 70 are also patentable over claim 49 since they depend from claim 49. Withdrawal of the rejection is respectfully requested.

Claims 12 and 24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chiles in view of US Patent No. 6,598,554 ("Lasky"). As mentioned above, claim 1 is patentable over Chiles. Neither Chiles nor Lasky, alone or in combination, teaches or discloses "the actuator is configured to adjust the ratio of the length of the first upper segment to the length of the first lower segment to vary the tilt angle of the deflector body," as recited in claim 1. Furthermore, there is no suggestion discerned in Chiles or Lasky of modifying the devices or methods disclosed therein in the direction of claim 1, nor is there any suggestion of the desirability of such modifications. Lasky teaches filling tanks with air to cause a vehicle to rise. Lasky does not teach about a bridle or using the lengths of segments on the bridle to alter the depth of the vehicle. Since claims 12 and 24 depend from claim 1 and since neither Chiles nor Lasky, alone or in combination, teaches, discloses or suggests all the limitations of claim 1, claims 12 and 24 are therefore also patentable over Chiles and Lasky. Withdrawal of the rejection is respectfully requested.

Claims 19-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chiles in view of US Patent No. 6,028,817 ("Ambs"). As mentioned above, claim 1 is patentable over Chiles. Neither Chiles nor Ambs, alone or in combination, teaches or discloses "wherein the actuator is configured to adjust the ratio of the length of the first upper segment to the length of the first lower segment to vary the tilt angle of the deflector body," as recited in claim 1. Furthermore, there is no suggestion discerned in Chiles or Ambs of modifying the devices or methods disclosed therein in the direction of claim 1, nor is there any suggestion of the desirability of such modifications. Since claims 19-20 depend from claim 1 and since neither Chiles nor Ambs, alone or in combination, teaches, discloses or suggests all the limitations of claim 1, claims 19-20

are therefore also patentable over Chiles and Ambis. Withdrawal of the rejection is respectfully requested.

Claims 22-23, 32-33 and 56 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chiles in view of US Patent No. 5,357,892 ("Vatne"). Neither Chiles nor Vatne, alone or in combination, teaches or discloses "wherein the actuator is configured to adjust the ratio of the length of the first upper segment to the length of the first lower segment to vary the tilt angle of the deflector body," as recited in claim 1 and "adjusting the ratio of the length of the first segment to the length of the second segment to control a tilt angle between the deflector and the towing cable," as recited in claim 49. Furthermore, there is no suggestion discerned in Chiles or Vatne of modifying the devices or methods disclosed therein in the direction of claims 1 and 49, nor is there any suggestion of the desirability of such modifications. Since claims 22-23, 32-33 and 56 depend from claims 1 and 49 and since neither Chiles nor Vatne, alone or in combination, teaches, discloses or suggests all the limitations of claims 1 and 49, claims 22-23, 32-33 and 56 are therefore also patentable over Chiles and Vatne. Withdrawal of the rejection is respectfully requested.

Claim 31 stands rejected under 35 U.S.C. § 112, second paragraph, for depending upon a cancelled claim. Accordingly, claim 31 has been rewritten to depend on claim 1. Withdrawal of the rejection is respectfully requested.

New claims 71-84 have been added to more clearly recite various aspects of the invention. Support for the new claims may be found throughout the specification, including paragraphs [0045] and [0049]-[0052], [0056]-[0057] and Figure 7A, Figures 9A-9B, and Figures 9F-9G. With regard to new claims 71-84, Applicants submit that claims 71-84 recite subject matter that is neither disclosed, taught, nor otherwise suggested by the cited references, and as such, allowance of these claims is respectfully requested.

In conclusion, the references cited by the Examiner, neither alone nor in combination, teach, show, or suggest the claimed invention. Having addressed all issues set out in the office action, Applicants respectfully submit that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,

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